

**TAKING STOCK OF TRENDS IN
SUSTAINABLE DEVELOPMENT FINANCING
SINCE RIO**

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1. INTRODUCTION

The United Nations Conference on Environment and Development (UNCED), better known as Earth Summit, in 1992 in Rio launched Agenda 21 as a blueprint for the world's transition to sustainable development. Chapter 33 of Agenda 21 provides for an agreed framework for financing sustainable development. Specifically, it assesses the costs of its implementation at US\$ 625 billion a year of which \$125 billion is slated to be additional financial transfers from North to South. It is clear that Agenda 21 recognizes that the main source of financing the sustainable development of a country is its own private and public sectors. It also recognized that in a world of wide economic disparities and global externalities, substantial new and additional resources are needed to assist the poorest of the developing countries to implement sustainable development. Official development assistance (ODA) is recognized as the main source of external financing for developing countries. Agenda 21 also emphasized the importance of debt relief for the heavily-indebted poor countries as well as the need for internal policy reforms in developing countries to mobilize domestic resources for sustainable development. The potential for the use of economic instruments and other innovative mechanisms for generating additional resources is also recognized in Agenda 21.

Five years have elapsed since the Earth Summit. While it might be too early to assess whether sufficient progress has been made towards sustainable development, the progress towards mobilizing the required financial resources for implementing Agenda 21 would be a good indicator. The present paper takes stock of what has been accomplished in sustainable development financing since Rio. It analyses the trends in domestic and external financing from both the private and public sectors and for each source of financing it briefly examines future prospects and actions needed for improved performance, especially for countries and sectors that lagged behind during the first five years since Rio.

2. AGGREGATE LONG-TERM FLOWS TO DEVELOPING COUNTRIES

Aggregate net long-term resource flows to developing countries have increased from US\$100 billion in 1990 to \$239 billion in 1995, a 140% increase (Table 1).

Table 1. Aggregate Net Long-term Resource Flows to Developing Countries, 1990-96

<i>(\$1,000 millions)</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996^a</i>
Aggregate net Resource Flows	100.4	122.9	148.4	211.8	205.0	238.7	278.2
<i>Official development finance</i>	56.5	65.8	55.7	54.5	52.2	56.8	43.8
Official grants	29.4	37.5	31.9	29.4	32.5	32.9	30.7
Official loans	27.1	28.3	23.7	25.1	19.8	23.8	13.0
Bilateral	11.6	13.3	11.3	10.3	9.3	12.6	-2.5
Multilateral	15.5	15.0	12.4	14.8	10.5	11.2	15.5
<i>Total private flows</i>	43.9	57.1	92.7	157.3	152.8	181.9	234.4
Private debt flows	16.5	16.1	35.8	44.7	40.7	58.0	95.5
Commercial banks	1.4	2.3	10.4	-1.6	8.6	33.8	42.5
Bonds	2.3	10.1	9.9	35.8	28.6	26.6	47.6
Others	12.8	3.7	15.5	10.5	3.5	-2.4	5.4
Foreign direct investment	24.2	33.8	45.9	67.7	79.4	91.8	93.2
Portfolio equity flows	3.2	7.2	11.0	44.9	32.7	32.1	45.7

^a Estimated *Source:* World Bank Debtor Reporting System.

They received their single largest annual increase (43%) in 1993 just after Rio, fell slightly in 1994 (because of the Mexican crisis that affected private capital flows). They resumed their upward trend with a 17% rise in 1995. The share of the private capital flows in the aggregate resource flows rose steadily from 44% in 1990 to 76% in 1995 (and that of official development assistance fell correspondingly). Preliminary figures for 1996 indicate continuation of these trends with aggregate net resource flows to developing countries rising to \$278 billion due to a further large increase in private capital flows (World Bank Debtor Reporting System). These trends are discussed in more detail below.

2.1 *Official Development Assistance: Unfulfilled Commitments*

Agenda 21 assessed the external financing needs of developing countries for implementing sustainable development at \$125 billion, identified ODA as the main source of these funds, and reaffirmed the long-standing UN target for ODA of 0.7% of the donors' GNP. While developed countries accepted these assessments and targets, no progress towards them has been made since Rio. To the contrary, ODA leveled off in nominal terms and declined in real terms. The trends in ODA may be summarized as follows:

- The rising trend of ODA throughout the 1970s and 1980s stopped in the 1990s; in nominal terms ODA leveled off after 1992 to just under \$60 billion (Table 1).
- In real (adjusted for inflation) terms, ODA peaked in 1992 and has declined thereafter: in 1995 it was under \$55 billion in 1994 prices compared to \$60 billion in 1992.
- As a percentage of donors' GNP, official aid declined from a high of 0.34% during 1990-92 to a low of 0.27% in 1993-95 (Killick 1997).
- Of the 21 members of the Development Assistance Committee (DAC), only four countries achieved the UN target of 0.7%: Denmark, Netherlands, Norway, and Sweden (OECD 1996).
- Seven DAC members registered a declining trend in aid budgets, but most ODA members did not exhibit a clear downward trend, at least in nominal terms (Killick 1997).
- Aid from non-OECD members has declined to under 2% of total ODA despite the transition of some countries (e.g. Korea, Thailand) from recipients to donors.

These trends must be seen and interpreted in the context of the unprecedented changes of the late 1980s and early 1990s. The end of the cold war has had two opposing effects on ODA. On the one hand, the reduced need for military expenditures should have freed more resources for development aid, as a peace dividend. On the other hand, the political support for aid diminished by the reduced relevance of security considerations, which in some cases motivated development assistance. A third impact of the changes in Eastern Europe and former Soviet Union was the conversion of former donors into new aid recipients. Official aid from the former COMECON countries has virtually disappeared. Aid to transitional economies of Eastern Europe and former Soviet Union increased from under half a billion US dollars in 1989 to \$9 billion in 1994 (Killick 1997). The absorption of 13% of official aid by transition economies explains in part the stagnation of aid to developing countries.

Other factors that contributed to the ODA trends observed since Rio include (a) the increased budgetary stringency among donor governments because of efforts to reduce budget deficits at home; (b) lack of strong evidence on the developmental and poverty-reducing benefits of aid; and (c) perceived inability of aid to leverage policy changes necessary to improve its effectiveness.

Trends in the way official aid is used are just as important as its volume. Increasing shares directed towards the poorer countries and towards social and environmental investments (or broadly towards the sustainable development sectors identified in Agenda 21) would constitute positive developments. The following four trends in ODA were observed during the 1990s (Killick 1997):

- An increasing share (around 13%) of official aid went to transitional economies, an entirely new group of recipients.
- Sub-Saharan Africa's share in total ODA going to developing countries rose to 31% in 1994 at the expense of South Asian countries whose share steadily declined.
- An increasing share (reaching 5%) of ODA went to debt relief.
- The amount of ODA going to emergency relief tripled in real terms, reaching 6% of the total aid.

In addition, there has been some shift of ODA towards the social and environmental investments; it is estimated that about 5% of ODA is now specifically targeted for environmental projects; for the World Bank the figure is 8% (see Box 1).

Box 1. World Bank Financing: A Case of Resource Redeployment Toward Sustainable Development

A major development since Rio is the conscious effort by multilateral and bilateral development assistance agencies and donors to redeploy their financing portfolios to better align with the priorities of Agenda 21. The World Bank is case in point. The World Bank is the largest single source of official development assistance. The Bank has increased its environmental project portfolio exponentially from one project in 1986 to 153 active projects in 1996, with the largest increases taking place during 1992-94. The Bank's active environmental portfolio is now spread across 62 countries and stands at \$11.5 billion. Sixty-three percent of this funding, or \$7.2 billion, has been made available since Rio. Environmental projects make up 8% of the Bank's total lending at \$87 billion since Rio. The World Bank estimates that its lending for the environment has leveraged an additional \$14.5 billion from other sources, "bringing total investment in the environment to \$26 billion," (Steer 1996). Perhaps more important than the Bank's increased environmental lending is the conscious effort made, especially since Rio, to take environmental concerns into account in all of the Bank's projects. The Bank estimates that almost a quarter of its lending since Rio has been directed to win-win projects that are good for both the environment and development, such as education, health, population, and targeted poverty reduction (Table 2). A further 16% of the Bank's lending is directed to projects with environment-growth trade-offs (category A in the Bank's E-A classification), such as energy or transport infrastructure projects that undergo rigorous environmental assessment to minimize, assess, and mitigate environmental impacts. More than 60% of the Bank's environmental portfolio is directed at pollution control and 32% at natural resource management, the balance going for institution building (Table 3). In its efforts to make its projects environmentally sustainable, the Bank has increasingly incorporated cleaner technology, maintenance, and demand management as well as institutional strengthening in its projects and sectoral programs.

Table 2. World Bank Lending since Rio—A Simple Accounting of World Bank Commitments, Fiscal Years 1993-96

<i>Type of lending</i>	<i>Billions of dollars</i>	<i>Percentage</i>
Total lending	87.0	100%
Environment projects*	7.2	8%
“Win-win” projects	24.2	28%
Category A projects	16.0	18%
All other lending	39.6	46%

*See companion volume to this magazine for a listing of environmental projects. *Source:* World Bank

Table 3. Active Portfolio of World Bank Environmental Projects (as of June 1995). (US\$ millions)

<i>Focus of Projects</i>	<i>Number of Projects</i>	<i>Number of Countries</i>	<i>Loan or Credit (\$billions)</i>	<i>Total Project Cost (\$billions)</i>	<i>Average Size of Loan or Credit (\$millions)</i>
Pollution management (Brown Agenda)	58	31	6.9	17.3	118
Natural resources (Green Agenda)	69	41	3.6	7.0	52
National institution building	26	23	0.9	1.6	36
Total	153	62*	1.4	25.9	73**

Notes: * Total number of borrowing countries; some countries have more than one. Figure as of June 1995.** Average size of loan for the whole portfolio. Figure as of June 1995. Source: World Bank

While some of these trends appear to be in the right direction, there are concerns that (a) the shift of resources from developing to transition economies is a distributionally regressive; (b) the shift from South Asia where most of the world's poor live to Sub-Saharan Africa does not necessarily improve the aid's poverty-targeting, but it does focus ODA's efforts on the region with the most refractory development problems; and (c) the increasing share of ODA that is absorbed by debt relief and emergency aid reduces the funds available for more conventional development investments.

In terms of effectiveness, there is no evidence that ODA is used more efficiently today than in the past. It is estimated that still 75 cents of every dollar of aid goes to finance current government expenditures rather than to long-term investments (Feyzioglu *et al.* 1996). There is also little evidence that aid by itself contributes either to higher growth of GDP or to reduction of poverty. There is evidence, however, that, in a good policy environment, aid has a positive impact on both growth and poverty reduction, but aid in itself does not appear to have motivated improved policies since donors rarely discriminate among recipients according to the quality of their policies. To the contrary, countries facing severe development problems because of bad policies tend to be regarded as needing more assistance. This, in turn, tends to create aid dependency, as in parts of Sub-Saharan Africa, where ODA is more than five times the level of domestic savings and 12% of GNP (Killick 1997). All these factors need to be considered in future efforts to increase the effectiveness of ODA in the future and reduce its unpopularity among the donors' domestic constituencies.

One positive development is the increased use of ODA as an instrument for mobilizing and channeling foreign direct investment as well as domestic resources to sustainable development in developing countries. For example, the Nordic Environment Finance Corporation (NEFC) and the Baltic Investment Programme (BIP) have used public funds creatively to mobilize additional funds, especially from private sources. NEFC mobilized investment for promoting sustainable development in Central and Eastern Europe, with only modest government involvement, while BIP has channeled capital, credit, and loan guarantees through existing Nordic and multilateral institutions. It is precisely in creating favorable conditions for attracting foreign investment and mobilizing local resources that ODA's greatest potential lies.

2.2 Private Capital Flows: Unexpected but Welcome Growth

In contrast to the stagnation of official development assistance, private capital flows to developing countries grew unexpectedly and rapidly. While private capital flows are not a substitute for ODA, they are a useful, indeed necessary, complement and help free resources for more targeted assistance to the poorest countries. The trends in private capital flows are seen in Table 1 and can be summarized as follows:

- Private capital flows to developing countries grew from being less than ODA in 1991 to being 3-4 times the level of official aid today. The share of private capital flows in aggregate resource flows to developing countries has almost doubled from about 40% in 1990 to about 80% in 1996 (Table 1).
- The role of private capital flows in capital formation in developing countries increased dramatically. Today they account for 15% of fixed investment in developing countries compared to only 3.7% in 1990.
- The most significant and stable component of private flows is foreign direct investment (FDI). It accounts for 40-50% of private capital flows and has increased steadily from \$24 billion in 1990 to over \$90 billion in 1995-96, nearly a fourfold increase (World Bank Debtor Reporting System). FDI is more significant to sustainable development than loans or portfolio equity flows because it is accompanied by a transfer of technology and know how. It is also less volatile and more predictable.
- Unlike ODA, private capital flows did not gravitate to the poorest countries. About 80% of private capital flows and three-quarters of FDI since 1990 went to twelve middle-income countries. East Asia received 60%, Latin America and the Caribbean 20%, and Eastern Europe and Central Asia 10%. Africa, Middle East, and South Asia combined received only 10%. The ten top recipients were Argentina, Brazil, China, India, Indonesia, Korea, Malaysia, Mexico, Russia and Thailand, all middle-income countries and none in Africa. When expressed as ratio to GNP, FDI was less concentrated than these figures imply: the FDI/GNP ratio during 1990-95 increased in all countries but it is still less than half that of middle-income countries while their need is obviously larger (UNCTAD 1996; Jun and Brewer 1997).
- It is projected (by the World Bank) that foreign investment in developing countries will continue to grow at the rate of 7-10% per year over the next decade because of several forces at work, including trade liberalization, privatization, technological innovation, falling transport and communication costs, improving credit worthiness of emerging economies, capital mobility, and increasing financial integration.

What does the rapid growth of private capital flows mean for sustainable development? As indicated already, private capital flows (including FDI) are not substitutes but complements to ODA, since poor countries that need them most attract the least. Moreover, private investment is not automatically channeled to sustainable development activities. To the contrary, social and environmental areas have been traditionally among the activities least attractive to foreign investors, partly because of government regulations that limited foreign (and even domestic) private sector involvement. Moreover, without enforcement of environmental regulations and freedom to charge user fees or raise tariffs to cover costs (including an acceptable return to capital) these sectors were not attractive to private capital.

However, during the past five to seven years a number of positive changes, such as deregulation, privatization, and financial innovation have increased the availability and attractiveness of these sectors to both domestic and foreign private capital. The development of innovative financing strategies such as (BOT, BOL, BOO etc.) have made it possible for the private sector to enter into infrastructure development, while the increased use of competitive bidding, coupled with environmental performance bonds or bank guarantees has improved the efficiency and environmental performance of FDI and hence its contributions to sustainable development. The past five years have witnessed a strong trend toward privatization of state-owned enterprises and public utilities, concessions to private developers of infrastructure inducing power generation, transportation, water supply and sanitation, and waste treatment, among others. The privatization of electric utilities in Argentina and concessions to private developers for public transport and waste management in Thailand and for water and sanitation in the

Philippines are cases in point. Indeed, there is a clear trend in the 1990s of FDI shifting from resource extractive industries to environmental services that are generally more environmentally benign.

Fears have been expressed that foreign direct investment gravitates to countries with lower environmental standards or lax enforcement (pollution havens). Repeated tests of the “pollution haven” hypothesis failed to find evidence that this is the case (Repetto 1995; Jaffe *et al.* 1993). To the contrary, there is growing evidence (Hettige *et al.* 1996) that foreign-owned firms or joint ventures tend to be cleaner than local firms (especially state-owned enterprises) for at least three reasons: (a) the usually higher environmental standards of the developed countries are embedded in the technology of the overseas subsidiary; (b) they export to environmentally sensitive markets; and (c) a degree of control is exercised by parent firms who do not want their image to be tarnished by environmentally irresponsible overseas operations. Furthermore, foreign investors exhibit a strong preference for a stable and predictable policy environment, which requires clear, transparent, and consistently enforced environmental regulations, approaching international standards. Indeed, this preference is exerting a strong pressure on developing country governments to streamline their environmental regulations to attract foreign investment. Nevertheless, the environmental performance of FDI should be continuously monitored, as should that of domestic firm.

Clearly, private capital flows into developing countries, especially emerging markets, will continue to grow rapidly into the foreseeable future. The challenge is to attract more foreign investment into the poorer countries and to direct it to sustainable development activities. In this regard, ODA has a critical role to play in leveraging private capital flows, both directly and through encouragement of better policies (prudent macroeconomic policies, outward-oriented trade policies) in the recipient countries. Governments can ensure through regulations, incentives, and voluntary agreements that new investment is directed towards sustainable goals or at the minimum that it does not jeopardize environmental, social, and long-term development goals.

At the multilateral level, there has been a clear trend since Rio to take into account more consistently the environmental and social effects of projects. This is true of both the Multilateral Investment Guarantee Agency (MIGA) which guarantees funds to governments and the private sector to reduce risks, and the International Finance Corporation (IFC) that provides loans, equity and other financial instruments to the private sector in developing countries (see Box 2).

2.3 External Debt: Progress in Stemming the Outflow of Resources

The aggregate external debt burden of developing countries in 1995 stood at \$2,068 billion. Excessive levels of debt burden act as impediments to sustainable development by (a) offsetting part of the inflow of resources into the country, (b) having a negative effect on domestic investment, and (c) reducing the attractiveness of the country to external private capital. The debt crisis of the 1980s actually resulted in many developing countries having a net outflow of resources as the debt-service payment exceeded the official and private capital inflows.

In the late 1980s and early 1990s, the debt problems of middle-income countries were alleviated through (a) successful rescheduling of bilateral external debt, (b) introduction of new instruments such as the debt-equity swaps and the Brady bonds, and, more importantly, (c) through sustained policy reforms that stabilize the economy, liberalize trade, and attracted foreign capital. The post-Rio years have witnessed the re-entry of many previously heavily indebted middle-income countries into the international capital markets. The Mexican financial crisis has been the only major case of relapse after successful re-entry among the middle-income countries during the 1990s.

The external debt situation of the highly indebted poor countries (HIPC), however, did not improve despite successive efforts by the international community to provide debt relief at increasingly concessional terms. Poor countries with large debts, most of them in Sub-Saharan Africa, continued to

experience difficulties in meeting their debt-service obligations for reasons that range from drought and civil conflict to lack of sustained policy reforms and prudent debt management. (The debt service due has remained at the unsustainable level of 15% of GNP. Only one-third of the debt service (or 5% of GNP) was actually paid by HIPC's. For some HIPC's the debt service ratio exceeds 100% of export earnings while others range between 20% and 100%. The actual debt-service ratio actually paid varies from 5% to 50% of exports.

Box 2. The International Finance Corporation (IFC)

IFC, the World Bank's private sector arm, is providing loans, equity, and other financial instruments and services to private companies in developing countries. With the governments in developing countries giving the private sector a larger role in infrastructure financing, development, and management, IFC has been increasing its role in financing private sector infrastructure projects in developing countries. As seen in Table 4, IFC doubled its infrastructure project approvals and funding in the year following Rio and doubled them again in 1994. In 1994 prices, the total project size in which IFC has participated was \$16 billion, IFC's gross investment \$2.9 billion, and net investment \$1.7 billion. The regional and sectoral distribution of IFC funding is shown in the table below. Power and telecommunications in Asia and Latin America received the bulk of IFC financing. Perhaps more important than the scale and scope of IFC financing is its post-Rio commitment to integrating environmental consideration into the mainstream of its activities through detailed environmental review, involvement of the civil society, consultation, and disclosure. In 1996, IFC and MIGA project sponsors dealt with environmental problems, ranging from pollution control, land rights, and biodiversity protection. Examples include the Kasese Cobalt Project in Uganda, the Riferia San Lorenzo in Argentina, and Kunda Cement Factory in Estonia. For the latter a cost-benefit analysis by IFC showed a 25% rate of reform for environmental investments (\$8.7 million) to control local and regional pollutants.

Table 4. IFC Infrastructure Project Costs by Sub-Sector and Region, 1966-June 1994

	<i>Total</i>		<i>Project costs, \$million, current prices</i>			
	No.	Cost \$million	FY911	FY92	FY93	FY94
Total	70	12,360	1,103	1,384	3,499	3,465
Sub-sector						
Power	28	5,706	1,009	548	1,742	1,618
Telecoms	21	4,861	89	350	1,586	880
Ports	9	222	5	-	109	34
Pipelines	6	1,092	-	432	-	571
Railroads	3	117	-	55	62	-
Water	2	362	-	-	-	362
Roads	1	313 ¹	-	313 ¹	-	-
Region						
Latin America	38	5,980	157	688	2,407	1,469
Asia	20	4,947	927	548	1,005	886
Europe	7	1,007	-	82	-	857
Sub-Sahara. Africa	3	102	19	67	-	16
CAMENA ²	2	323	-	-	88	236

1 FY = fiscal year; IFC's fiscal year is July1-June 30.

Source: IFC. Note: This table excludes IFC investments in infrastructure funds. ¹ Exempted from the totals, as IFC did not provide finance directly, but underwrote bond issue. ² Central Asia, Middle East, and North Africa.

On the positive side, not even the highly indebted countries today face a net outflow of resource. First, the Paris Club of bilateral donors has forgiven or rescheduled the bulk of bilateral debt of low-income countries at increasingly concessional terms: the level of concessionality (reduction of net present value of rescheduled amount) increased from one-third in 1988 under the "Toronto terms" to two-thirds in December 1994 under the "Naple terms." Second, the IDA Debt Reduction Facility facilitated the reduction of commercial debt through buyback programs. Over the past five years, net resource flows (gross flows minus principal payments) to HIPC countries averaged 8% of GNP. Third, despite the increase in multilateral debt to the highly indebted poor countries, debt-service payment on multilateral debt remained stable to about 8.5% of exports per year throughout 1990-1995 (as it was during 1985-90) due to the increased concessionality of loans.

Despite these positive developments, the highly indebted poor countries continued to have unsustainable levels of debt that impede their development by draining resources and discouraging domestic and foreign investment. Debt-service ratios for many HIPC countries are actually expected to double between 1994 and 1997. In a recent positive development, the IMF's Interim Committee and the IMF/World Bank Development Committee proposed a new framework for action to reduce debt problems of 41 HIPC countries to sustainable levels. The HIPC Debt Initiative, estimated to cost between \$6 and \$8 billion, has a number of positive and highly promising features: (a) it targets the poorest and most heavily indebted countries; (b) it adopts a comprehensive approach that includes multilateral, bilateral, and even private debt; (c) it is conditioned on the adoption and sustained implementation of sound economic policies; and (d) it targets debt-sustainability on a case-by-case basis and provides for a durable exit strategy from the rescheduling process. Under this initiative, Paris Club bilateral creditors would reduce the debt in net present-value terms by up to 80%, other non-multilateral creditors by at least comparable terms, and multilateral creditors would reduce their own claims sufficiently to achieve a sustainable debt level for each participating country.

One instrument through which debt relief has been directed specifically toward sustainable development activities has been the debt for sustainable development conversion. Debt conversions or debt swaps are legal and financial transformations of a country's liability in hard currency into a local currency obligation which often includes a discounting of the original debt. Debt swaps can be executed for both official and commercial debt and can take a variety of forms, such as debt for equity, debt for exports, debt for education, debt for nature, and debt for sustainable development swaps. A key issue here is whether debt swaps of any kind lead to additional funds for developing countries. Using ODA to buy debt titles or cancel official debt obviously does not create additional resources; making additional ODA available for the execution of debt swaps does. In general, reduction of bilateral debt qualifies as ODA. Debt swaps may improve the efficiency with which resources are being used if local funds are subject to more scrutiny and accountability or may reduce efficiency if earmarking insulates them from competition with socially more productive uses. Debt for equity swaps have been the most prevalent form of debt conversion, but debt for nature or for sustainable development, though less significant in terms of debt reduction, have been important in terms of (a) redirecting investment opportunities towards the social and environmental sectors as the experience of Bolivia, Costa Rica, Ecuador, Philippines, and Poland demonstrates. Debt for nature swaps have also been more important as sources of funds for NGO activities than as means of debt relief. While the future prospects of debt swaps for commercial debt is limited, there is unexploited potential in mobilizing additional resources through swaps of official debt. A case in point is the Ecofund in Poland which is partially capitalized through US and Swiss bilateral debt swaps.

3. GLOBAL ENVIRONMENTAL FINANCING INNOVATIONS

While official development assistance, private capital flows, and debt relief all contribute to sustainable development through increased resource availability and growth, none of these resource flows is specifically directed toward environmental sustainability. Since Rio there has been a discernible trend to redeploy external resources towards environmental investments in developing countries as well as to

improve the environmental performance of overall investments (see Boxes 1 and 2), and there is wide scope and need for further shifts. Yet, for a set of environmental problems that have global impacts but require investments in developing countries, such as biodiversity loss, global warming and ozone depletion, the world, until recently, lacked appropriate institutions and funding mechanisms. In general, there has been an unmet need for environmental financing mechanisms that are incremental to official development assistance to finance environmental investments in developing countries without distorting or crowding out their development investment priorities. The 1990s have witnessed the emergence of international environmental financing institutions and the advancement of instruments of international taxation.

3.1 *Global Environmental Financing Institutions*

The most important of the global environmental financing institutions is the Global Environmental Facility (GEF) established in 1990 with \$1.3 billion to provide grants and concessional funds over a three-year pilot phase. GEF is now an established institution with regular capital replenishment (the latest of \$2 billion over three years) through individual country contributions (mainly from developed countries). The facility assists developing countries to address four areas of global environmental concern: global warming, loss of biodiversity, pollution of international waters, and depletion of stratospheric ozone. The latter is addressed by an associate “institution,” the Montreal Protocol. GEF draws on the expertise and experience of three global institutions: UNDP, UNEP, and the World Bank. The Global Environmental Facility and Montreal Protocol investment program implemented through the World Bank during 1991-96 stood at \$725 million. On the average, GEF is funding 20% of the total costs (\$2.8 billion for the period 1991-96) of projects in developing countries with global benefits (see Table 5). The GEF contribution varied from a low 7% in climate change projects to a high of 65% in biodiversity protection projects. Almost half of GEF funding went to the protection of biodiversity and leveraged additional funding from other sources. The cumulative funding for biodiversity-related activities managed by the World Bank increased from under \$50 million in 1989 to over \$1.2 billion in 1995; since Rio it doubled.

GEF has increasingly been using its resources to leverage additional funds, especially from the private sector. The IFC/GEF Poland Efficient Lighting Project and the IFC/GEF Small and Medium Enterprises Project are two examples. By putting relatively small amounts into venture capital funds, GEF is able to mobilize 4 or 5 times as much in equity financing in the private sector, which in turn mobilizes a multiple in loan financing. By one account GEF is able to mobilize 10-20 times the amount of funds it invests in biodiversity and other conservation investments (A. Steer quoted in UN 1996). GEF is up this year for a new three-year replenishment.

A new and most innovative mechanism for mobilizing resources for environment and development that has emerged since Rio is joint implementation, whereby, parties in one country (usually a developed country) contract with parties in another country (usually developing) to reduce that country's GHG emissions. The expectation is that the investor country would eventually receive credit against its own commitment to reduce GHG emissions under the Framework Convention on Climate Change (FCCC), while the host country derives development and local environmental benefits from the investment. Likely projects include energy efficiency investments, fuel switching, investments in renewable energy, low-impact logging, and protecting and planting forests as carbon sinks. Table 6 lists a sample of joint implementation projects implemented since Rio. While this is only a partial list, the amounts involved are substantial, as are the global and local environmental benefits. Joint implementation is potentially a very important source of additional financial flows for sustainable development investments with both local and global environmental benefits, provided it is incremental to existing flows and does not distort the host country's development priorities.

Table 5. Global Environmental Facility and Montreal Protocol Investments (1991-96). (million US\$)

<i>Global Environmental Facility</i>							
	Biodiversity	Climate change	International waters	Ozone protection	Total	Montreal Protocol (ozone protection)	Total
Africa	42	6	35	—	83	—	83
	(65)	(66)	(78)	—	(209)	—	
East Asia & Pacific	65	52	30	—	147	101	248
	(125)	(1545)	(65)	—	(1735)		
South Asia	10	26	—	—	36	24	60
	(20)	(186)	—	—	(206)		
Middle East & N. Africa	14	12	21	—	47	6	53
	(17)	(71)	(33)	—	(121)		
Europe & Central Asia	42	35	—	35	112	12	124
	(52)	(197)	—	(57)	(306)		
L. America & Caribbean	72	14	18	—	104	53	157
	(101)	(36)	(56)	—	(193)		
Total	245	145	104	35	529	196	725
	(380)	(2101)	(232)	(57)	(2770)		
<i>Ratio of GEF funding to total funding</i>	0.65	0.07	0.45	0.61	0.19	—	—

Note: Figures in parentheses are total project costs. *Source:* World Bank “World Bank Environmental Projects July 1986-June 1996.”

Table 6. Examples of Activities Implemented Jointly between Developed and Developing Countries

<i>Country</i>	<i>Project type</i>	<i>GHG offset (tons of carbon)</i>	<i>Total project cost</i>	<i>Foreign sponsor contribution</i>
Malaysia	Improved forest management	80,000-160,000	\$600,000	\$600,000
Malaysia	Reforestation	6,300,000	\$16,500,000	\$1,300,000
Czech Republic	Fuel switching and energy efficiency	3,500 per year	\$1,500,000	\$600,000
Czech Republic	Reforestation	3,100,000	\$29,500,00	\$5,700,000
Amazon Basin	Forest protection	64,000,000	\$3,400,000	\$3,000,000
Guatemala	Tree planting, forest protection	16,500,000	\$15,800,000	\$2,200,000
Paraguay	Forest protection	14,000,000	\$3,900,000	\$2,000,000
Ecuador	Reforestation	9,700,000	\$17,000,000	\$1,100,000
Belize	Forest protection, improved forest management	1,300,000	\$2,600,000	\$2,600,000
Russia	Reforestation	35,000	\$250,000	\$250,000
Costa Rica	Various	200,000	\$2,000,000	\$2,000,000

Sources: Applied Energy Services Incorporated (AES): "AES: Greenhouse Gas Offset Programs" Fall Update 1993, Arlington, VA, USA.

United States Initiative on Joint Implementation (USIJI) *About USIJI—A Program Profile*, Washington, D.C., USIJI, 1996.

United States Initiative on Joint Implementation (USIJI) *Activities Implemented Jointly: First Report to the Secretariat of the United Nations Framework Convention on Climate Change*, US Government Document, DOE (P0048), Washington, D.C., 1996.

Because of these concerns, the first conference of the Parties to the Climate Convention in Berlin in March-April 1995 established a pilot phase for Activities Implemented Jointly during which no crediting is allowed. During the pilot phase, experimentation is encouraged, as long as (a) it has the approval of the governments of participating countries, (b) supports national environment and development priorities; (c) results in additional measurable gains, and (d) it is incremental to current ODA.

The following developments during the pilot phase are indicative of the potential of joint implementation as a mechanism of cooperation between North and South and as financing mechanisms for sustainable development:

- On the demand side, at least 12 countries have included joint implementation in their national climate action plan, mandated by the Climate Convention: Australia, Canada, Costa Rica, Denmark, Finland, Germany, Iceland, Japan, the Netherlands, Norway, Sweden, and the United States.
- On the supply side, at least a dozen countries have signed statements of intent to cooperate with the United States, among them: Bolivia, Chile, Pakistan, South Africa, and seven countries in Central America (Zollinger and Dower 1996).
- As of July 1996, 17 countries are listed in the pilot phase as having launched or proposed projects (“activities implemented jointly”); 32 projects mainly in Central America and Eastern Europe have received official bilateral approval (UN-FCCC 1996).
- Of more than 50 proposals submitted to the US Initiative on Joint Implementation, 15 have been approved, and of these, four have been fully financed. Of more than 40 submissions to the International Utility Efficiency Program in Washington, DC, nine are being considered for implementation (Zollinger and Dower 1996).
- The International Business Action on Climate Change, a private sector initiative by the World Business Council for Sustainable Development (WBCSD) has received over 80 submissions, potentially worth \$3 billion, although few are developed enough to be considered as pilot projects (WBCSD 1996).
- The Netherlands has set aside \$51 million for joint implementation programs in Eastern Europe.
- Norway has set up bilateral joint implementation demonstration projects and recently purchased 200,000 tons of carbon in certified transferable offsets from Costa Rica at the cost of \$2 million (R. Castro personal communication). Norway also co-finances World Bank and IFC investments and research on activities implemented jointly.

Despite these positive developments since Rio, joint implementation still falls short of its potential as a major source of financial resources and technology transfers because emission reductions achieved through activities implemented jointly cannot yet apply against the investor countries’ national commitments under the Climate Convention. While joint implementation is a win-win mechanism in economic and environmental terms, it faces difficult political and technical problems that need to be resolved before carbon offsets and credits across borders received the official sanctioning by the conference of the parties to the FCCC beyond the pilot phase. Political objections include concerns that joint implementation may be used as a substitute for development assistance or as a vehicle for distorting environment and development priorities in host developing countries. There are also concerns about the terms of trade, or sharing of the benefits, and the disincentive for OECD countries to develop cleaner technologies. It is notable that several major developing countries such as Brazil, China, India, and Indonesia are not participating yet. Technical problems include establishing the “additionality” of carbon reduction, monitoring, cross-border emission reductions, and certification and crediting of offsets among

others.

On the positive side, as greenhouse gases (GHG) continue to build up and governments are forced to adopt more binding targets, the search for cost-effective GHG reduction measures will intensify. Given the large differences in the costs of implementing projects among countries, a political compromise that will provide for a more widely acceptable arrangement and division of benefits is likely to be worked out. Estimates of the global costs of meeting any given GHG reduction target indicate 50-70% lower costs with international cooperation (trading) than without it (Richels *et al.* 1996). Realizing these benefits would require more effective partnerships between North and South governments and between the public and private sectors to mobilize and channel resources as to address both environment and development challenges. Establishment of binding commitments on global and national emission reduction targets would be a major boost for joint implementation projects.

Joint implementation projects are an important step towards an international system of tradable permits for greenhouse gas emissions. Such a system can be implemented gradually, first among OECD countries and later globally. A global emissions trading system promises huge economic and environmental benefits but, like joint implementation, faces political and technical problems. Significant progress has been made since Rio in better understanding the problems involved and developing options, such as alternative formulas for permit allocation. UNCTAD is carrying out an extensive research effort on the design and implementation of internationally tradable emission permits and is developing a pilot emissions trading project in cooperation with the Earth Council (Joshua 1996). Again, establishment of binding emission reduction commitments would accelerate progress towards an international emissions trading system which, if properly designed and implemented, promises to effect significant transfers of financial and technological resources to developing countries.

3.2 Global Environmental Taxation

Existing international financing mechanisms rely largely on voluntary contributions by nations, and as such they provide inadequate and erratic or unstable resource flows for international environmental investments. International environmental problems such as global warming, biodiversity loss, and ozone depletion are global public goods that call for global environmental taxation, which, in turn, requires sovereign nations to yield their sovereign powers of taxation to a supranational authority. Three such taxes have been proposed: (a) an international foreign exchange transactions tax, known also as Tobin tax; (b) an international carbon tax on energy fuels, and (c) an international air transport tax. Of these three taxes, the Tobin tax is expected to generate the largest revenues (in the hundreds of billions of dollars) but has no positive environmental effects. The carbon tax would generate the largest environmental benefits (by discouraging high-carbon fuels) and at the same time generate substantial revenues (\$55 billion per year according to Shah and Larsen 1992), but, unlike the other two, is distributionally regressive. The air travel tax, though progressive in its incidence, it generates limited revenues and limited environmental benefits.

While the debate on these instruments of international taxation has intensified in the post-Rio years, little progress has been achieved towards serious consideration of any one of them, largely because of the reluctance of sovereign nations to yield sovereign taxation powers to a supranational authority. Nevertheless, there appears to exist considerable public support for some form of international resource mobilization for the environment. In a Gallup Survey (Dunlap *et al.* 1993) in 30 major countries following the Earth Summit, industrialized country citizens by a majority of 70-90% favored contributing money to an international environmental agency. Over two-thirds of the respondents expressed support for such a global institution and indicated willingness to let their own governments grant it the necessary authority. In the absence of political will among governments to do so, an alternative institutional arrangement must be found, which yields the minimum possible delegation of tax authority. Among the alternatives proposed are the harmonization of national taxes through international agreements and non-sovereign international taxes along the lines of the European Union taxes, which involve a minimal

delegation of sovereignty by member states. The latter are allowed to keep a percentage of the tax revenues for their own use (Herber 1997). Ultimately, progress would depend on galvanizing global political consensus on the need to mobilize stable and predictable global resources to address global environmental problems. A gradual approach of first introducing a modest OECD carbon tax may help build consensus for a global application at a later stage.

4. DOMESTIC RESOURCE MOBILIZATION: A MIXED PERFORMANCE

While external resource flows to developing countries are important for sustainable development, domestic resource mobilization is absolutely critical. Agenda 21 assessed the domestic resource mobilization needs of developing countries for implementing sustainable development at \$500 billion a year. How much progress has been made since Rio in mobilizing these resources? To answer this question, it is necessary first to identify the different ways in which domestic resources can be mobilized to finance sustainable development. Sustainable development calls for increased national savings and capital formation to offset resource depletion and population growth, to expand infrastructure and human capital and improve the environment. National savings are composed of private and public savings; excessive private and public sector consumption reduces the share of national income that is available for investment. Private savings increase in response to higher rates of return, lower tax rates, investment incentives, consumption taxes, and availability of new financial instruments such as pension funds. Public savings can increase by reducing unnecessary government consumption, subsidies, and budget deficits. Since certain taxes tend to raise public sector savings at the expense of private savings, we first focus on trends in national savings. There is little evidence that in the aggregate the world's average savings rate have changed much since 1990. It continues to be around 22% of world GDP (IMF, various issues; World Bank 1995). Regionally, low savers, such as Africa and Latin America, continue to save around 15% and 19% of their GDP respectively, while high-saver Asia further increased its savings rate from 28.5% in 1990 to 30.1% in 1994. These gains were offset by a fall in savings in Europe, especially in transitional economies.

Public sector savings, however, improved in several countries that implemented macroeconomic reforms, privatized money-losing state enterprises, reduced subsidies, and brought government consumption under control. Argentina and the Philippines are two cases in point.

Governments have essentially three ways in mobilizing resources for sustainable development. First, they can increase their own savings by reducing subsidies and government consumption and direct it towards sustainable development investments. Second, they can mobilize additional resources through tax reform and improvement in tax collection, as well as through revenues from user fees and charges. Third, they can influence the level of savings and investment of the private sector through monetary, fiscal, and debt management policies and redirect it to meet sustainable development needs through changes in ownership structure, price reform, and capital market development. Therefore, we may distinguish the following avenues of domestic resource mobilization:

- subsidy removal
- tax reform
- economic instruments
- mobilizing private sector resources

A very specialized instrument that has been increasingly used in developing and transitional economies to mobilize resources and to redirect them towards environmental investments has been the institution of national environmental funds. We will assess the progress made in domestic resource mobilization by reviewing the trends with regards to reforms and instruments.

4.1 *Subsidy Removal*

Governments have, over the years, introduced a variety of subsidies aimed at promoting new technologies (e.g. pesticide subsidies), helping out the poor (e.g. water subsidies), alleviating capital constraints (e.g. capital subsidies), or satisfying political constituencies (e.g. energy subsidies). Some of these interventions such as the water subsidies, capital subsidies, and interest rate ceilings were ill-conceived at the outset; others, such as fertilizer and pesticide subsidies, have outlived their purpose and usefulness; yet others, such as the energy subsidies, started small but have now become a large source of budgetary and social costs as energy use grew and its environmental impacts multiplied. These subsidies, though serving no useful purpose, persist as monuments of inefficiency and poor governance for reasons that range from ignorance of their true costs and sheer inertia to vested interests and institutional weakness.

Environmentally damaging and economically distortionary subsidies are estimated to range between \$0.5 and \$1.00 trillion per year, divided roughly equally between developed and developing countries (Moor 1997; Roodman 1996; Xie 1996). In OECD most heavily subsidized is agriculture (over \$330 billion) followed by road transport (\$85-200 billion). In developing countries energy (\$150-200 billion) and water (\$42-47 billion) receive the largest subsidies. These subsidies are a large drain on the budget, distort economic decisions, and thereby lower economic efficiency and growth, accelerate the depletion of natural resources, and degrade the environment. They are also distributionally regressive as they benefit mostly the wealthy. To put subsidies in perspective, they exceed the annual public sector budget for investment in developing countries, which is estimated at \$300 billion. The removal of subsidies would save budgetary resources and increase public savings while reducing environmental damage, economic distortions, and inequality. Even if no part of the budgetary savings is spent on the environment or other sustainability-enhancing investments sustainable development would still be advanced by virtue of reduction of environmental damage and the shift of resources from high to low environmental impact activities, which is equivalent to resource deployment and to securing additional financial resources.

Has there been a trend towards reduction of subsidies in recent years? The answer is “yes” but the process has been slower than necessary and possible as evidenced from several cases of rapid phase down. The following trends are both recent and encouraging:

- There has been a major reduction in energy subsidies in developing countries from over \$300 billion in the early 1990s to about \$150-200 billion today, a 30-50% reduction over the past five years. The subsidies of fossil fuels (coal, natural gas, petroleum) fell from about \$114 billion in 1990-91 to about \$58 billion in 1995-96 (see Figure 1). Most notable is the reduction of coal subsidies in China from \$750 million in 1993 down to \$250 million in 1995, a 67% cut, and the substantial reduction of energy subsidies in Indonesia, Mexico, and Venezuela. It is estimated that removal of energy subsidy in developing countries would yield \$35 billion in economic benefits (measured in social welfare terms).
- Cost recovery in irrigation has increased from an estimated 10-20% in the 1980s (Repetto 1988) to about 20-25% today (Moor 1997). Still, \$20-25 billion go to irrigation subsidies in developing countries every year and another \$20 billion to drinking water supply. Removal of water subsidies would reduce water use by 20-30% (in parts of Asia by as much as 50%) and make it possible to supply most of the \$1.2 billion people without access to safe drinking water without large environmentally destructive water development projects.
- Agricultural subsidies (not including irrigation subsidies) are estimated at \$10 billion, which is lower than earlier estimates. There has been a definite downward trend in the subsidization of agrochemicals. For example, annual fertilizer subsidies in India have been reduced from \$2,833 million during 1988-90 down to \$1,685 in 1994, a 40% reduction since 1990 (FADINAP Database). In Indonesia fertilizer subsidies were cut from \$515 million during 1988-90 to only

\$96 million in 1994, an 80% reduction. Similar trends are observed in Bangladesh (which saved \$100 million annually), Pakistan, and the Philippines. Positive developments also occurred with regard to pesticide subsidies, which in developing countries in the late 1980s totaled \$2 billion totaling \$2 billion (author's estimates). The most notable example being Indonesia which cut its pesticide subsidies from \$128 million per year (or 82% of the retail price) in the mid-1980s down to zero in the early 1990s (Panayotou 1993).

- While road transport subsidies in developing countries still amount to \$15 billion (Moor 1997), there is growing use of user charges such as tolls (China), auctioning of urban street rights (Santiago, Chile), area licensing (Singapore), and gasoline taxes (Mexico City), that are beginning to reduce congestion and improved cost recovery. The increased involvement of the private sector in financing, building, and operating public transport systems during the 1990s is creating pressures to reduce road subsidies and increase user fees. Argentina for example cut subsidies to suburban rail system by \$25 million between 1993 and 1995 when it privatized the operation of urban transport (Rebelo 1996).
- In a recent survey of environmental policy makers in Asia large percentages of respondents reported removals or reductions of environmental damage subsidies in their countries: agrochemicals 39%, gasoline 22%, electricity 17%, diesel 11%, and water 11% (see Figure 1).
- In a recent survey of environmental policy makers in Asia, 40% reported removals or reductions of agrochemical subsidies, 22% reported removal of gasoline 17% electricity subsidies, and 6% removal of diesel subsidies (Figure 2).

The prospects for further reduction of subsidies during the next five years are favorable because of accumulated success cases and because of increasing realization of their large costs and dubious benefits. Progress, however, will continue to be slow because of opposition by vested interests. Increasing public awareness and transparency are key to more speedy removal of environmentally detrimental subsidies. International cooperation and concerted action may help alleviate concerns regarding the rational, though largely unfounded, concern about the potential short-term impact of subsidy removal on international competitiveness.

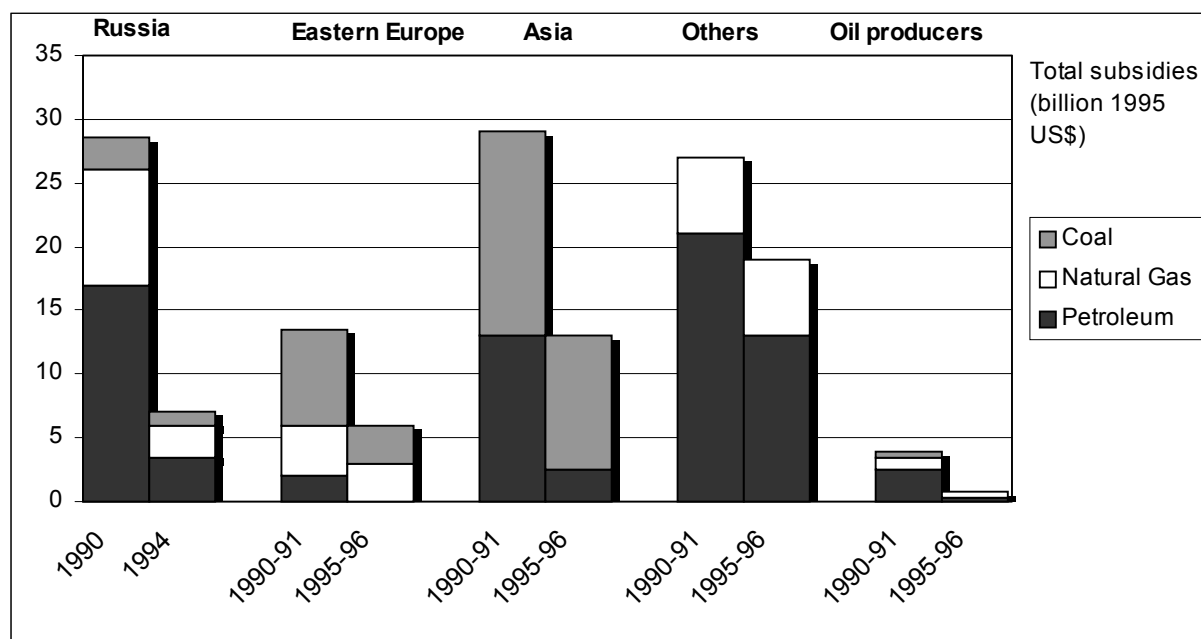
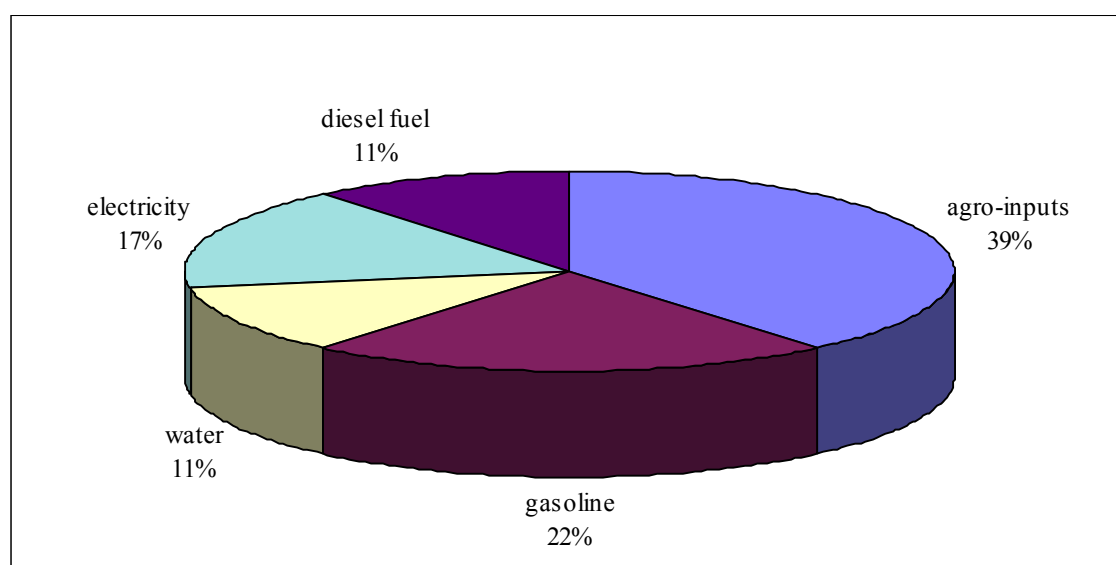


Figure 1. Estimated Changes in Energy Subsidies in Selected Countries, 1990-91 to 1995-96

Source: The World Bank (1997) *Expanding the Measure of Wealth: Indicators of Environmentally Sustainable Development*, Rio+5 Edition Draft for Discussion, The World Bank.

Figure 2. Percentage of Respondents (Among Surveyed Asian Environmental Policy Makers) Reporting Removal or Reduction of Environmentally Damaging Subsidies in the



Last Five Years (1991-96), Developing Asia

Source: Asian Development Bank and Harvard Institute for International Development Survey of Asian Policy Makers on Environmental Issues for the Emerging Asia Study, November 1996. The survey was conducted by the Asian Development Bank by mail through official channels and the data were analyzed by T. Panayotou of the Harvard Institute for International Development.

4.2 Tax Reform

Typically developing countries have complex tax systems with a narrow tax base, too many tax brackets and in some cases excessively high tax rates. This tax structure combined with poor tax administration results in high collection costs, high rates of tax evasion and low tax revenues. An excessive number of tax exemptions, tax holidays and fiscal incentives further erodes the tax base and distorts resource allocation. For example, generous tax depreciation and investment allowances are more effective as implicit taxes on labor than as incentives for investment. As a result, tax revenues are limited, typically in the range of 14-18% of GDP compared to over 30% in OECD. Were this to reflect a smaller bureaucracy and a more efficient government as is the case of some East Asian countries, it would have been an advantage. Unfortunately, this is rather a reflection of an inefficient tax system, as revenues are inadequate to cover government expenditures and lead to chronic budget deficits, especially in Sub-Saharan Africa, and parts of South Asia and Latin America.

Fiscal reforms aim to: (a) broaden the tax base by shifting from narrowly-based international trade taxes to broadly-based income and value-added taxes; (b) simplify the tax structure by having fewer tax brackets and uniform tax rates; and (c) improve tax administration. The ultimate goal is to raise tax revenues and reduce market distortions.

The late 1980s and especially the 1990s have witnessed an unmistakable trend for countries to undertake wide-ranging tax reforms. The trend has been as strong in Sub-Saharan Africa as it has been in Asia and Latin America. For example, Kenya was able to raise the share of tax revenues to GDP from under 20% in 1990 to 26% in 1994, Angola from 22% to 36%, Lesotho from 19% to 26% and Zambia from 14% to 18%. Similar gains were observed in the Philippines, Bolivia and Argentina, among others. Indeed, it is safe to assume that most developing country governments have succeeded in raising the share of tax revenues in GDP by at least 1% of GDP, which amounts to \$65 billion, a sum somewhat larger than ODA. Further increases of this magnitude are likely to occur over the next five years as on-going tax reforms begin to take hold and produce larger revenues from an expanding tax base.

A special type of tax reform that aims not so much to raise revenues as to improve economic efficiency and environmental sustainability is the greening of the tax system, whereby distortionary taxes on work, profits and savings are partially replaced by taxes on resource depletion and pollution (or polluting products), with or without an increase in overall tax revenues. Studies have shown that if taxes with high marginal rates are chosen to be replaced by environmental taxes that are broad-based (e.g. energy taxes) and whose incidence falls on factors with low marginal excess tax burden, a so-called "double dividend" may result consisting of higher GDP and lower environmental damages. For example, Shackleton *et al.* (1992) found that in the U.S., a capital tax cut with revenue replacement by a phased-in carbon tax would raise real GDP by 0.20 percent and social welfare by 0.19 percent. A labor tax cut, on the other hand, replaced by a similarly phased-in carbon tax would raise GDP by only 0.03 percent and welfare by 1.01 percent (Shackleton *et al.* 1992). The Swedish tax reform of 1991 has successfully reduced the marginal tax rate for 90% of the income earners from 50% to 30% and replaced the revenues through CO₂ and SO₂ taxes achieving significant efficiency gains and environmental improvements. Hungary, the Czech Republic and quite a few developing countries are exploring the feasibility of similar tax reforms. Environmental taxes can of course be used to raise additional tax revenues, but where they are viewed by government as just one more way to tax people public support is limited. In OECD countries in 1993, 7% (up from 6% in the previous year) of the total tax revenues was generated by environmental taxes (mainly on fuels, coal and electricity.) In Norway and Portugal, the share of environmental taxes exceeds 10% of the total tax revenues. We expect over the next five years to see many more countries introducing environmental taxes. Even a one cent per liter tax on gasoline would generate \$20 billion of which one-third would be in developing and transition economies (Gandhi *et al.*, 1997).

4.3 *Economic Instruments*

Environmental taxes are one type of a class of instruments known as economic or market-based instruments which can be used to mobilize resources for sustainable development. These could be budgetary like environmental and resource taxation or extra-budgetary (non-tax) such as pollution charges, deposit-refund systems, environmental bonds and tradable pollution permits. Economic instruments have a dual role to play in sustainable development, first as incentives for promoting environmentally responsible behavior, and second as sources of revenues for environmental and other sustainable development investments. Agenda 21 recognizes the potential role of economic instruments in financing and promoting sustainable development and called for their wider use.

In taking stock of trends in sustainable development financing since Rio, it is appropriate to ask what progress has been made towards more wider application of economic instruments. Here are the main developments over the past few years with regard to resource and environmental taxation, tradable permits and other innovating instruments.

Resource taxation has generally increased from 7-20% of resource rents in the 1970s and early 1980s to over 50% of the rents at present, through successful reforms especially of the forest sector policies. Examples include Indonesia, Philippines and Honduras. The Philippines raised the charge on timber cut from 1% of the market price in the late 1980s to 20% in the early 1990s while Honduras raised the stumpage price from \$5 per m³ in 1992 to \$33 per m³ in 1994. Indonesia was able to mobilize an additional billion dollars of revenues by reforming its forest tax policy. Yet the World Bank estimates that by raising its stumpage fees to cover 75% of the resource rents, Indonesia would be able to obtain another \$1.5-2.0 billion, a 6-8% increase in government revenues (see Table 7). Low stumpage charges are also found in China, Cameroon, Kenya, Nigeria and Surinam among others. Indonesia has been particularly successful in capturing rents from petroleum and mineral extraction. Others, such as Russia and the oil producing countries of Eastern Europe and Central Asia stand to gain between US\$ 10-20 billion in additional revenues through more efficient pricing and royalties and taxes that capture a larger part of resource rents. Venezuela can increase government revenues by 6% by raising petroleum prices to world levels.

The introduction of environmental taxation in general (both budgetary and extrabudgetary) especially in the form of energy taxes has accelerated during the period, first among OECD countries, and increasingly among developing countries. While all OECD countries tax pollution one way or another, tax rates have been low aiming to collect revenues rather than to provide incentives for changing behavior. The 1990s have witnessed the unilateral introduction of carbon taxes and an effort led by the Nordic countries, the Netherlands and Germany to increase environmental tax rates in general to more meaningful levels. For example, Sweden introduced taxes on carbon dioxide (U.S. \$0.4/kg), sulfur, (US\$ 4.55/kg) and on nitrogen oxide (US\$ 6.05/kg) in the early 1990s, which not only generated \$2 billion in tax revenues but also reduced the use of transport fuels by 2% and induced a fuel shift among power stations from coal to biofuels. Finland introduced an even higher tax of carbon on \$6.10 per ton on all fuels since 1990. However, a European Community carbon tax proposal at a graduated rate from \$1 to \$10 per ton of carbon over a period of several years failed to receive approval. Extra-budgetary pollution taxes or charges have been introduced throughout Central and Eastern Europe with the revenues earmarked for environmental purposes and deposited in specially designed environmental funds (see below).

In developing countries, pollution charges have been introduced, largely as sources of environmental revenues, in several countries including Malaysia, Korea, Indonesia, Thailand, India, PRC, Brazil and Mexico among others. The most notable examples of pollution charges aimed to act both as incentives and revenue sources are the differential tax between leaded and unleaded gasoline in Thailand and the reform of the long-standing pollution levy system in China to improve efficiency and compliance. China

has also recently introduced a sulfur tax on an experimental basis. While China's pollution levies generate 15-20% of all of China's capital expenditure for pollution control, their rates are still far below the marginal cost of pollution control. This is true of environmental taxation generation. For example, the World Bank estimates that Indonesia can generate between \$0.6 and \$1.1 billion (or 3-5% of government domestic revenues) from pollution and congestion charges in selected urban centers (see Table 7). Hammer and Shetty (1995) estimated that the proper tax rate on gasoline in Malaysia would generate about 7% of the total government revenue.

Despite their great potential, both as incentives for improved environmental behavior and generators or revenues for financing sustainable development investment, environmental taxes have not expanded as rapidly and as widely as it was hoped because of the political cost of higher taxes and concerns about their effect on competitiveness and distribution. While these concerns can be overcome through better design, better marketing and gradual implementation, wider adoption will continue to be rather slow, but accelerated somewhat because of the snowballing effect of an increasing number of successful introductions.

Tradable permits could be a major source of environmental finance because they reduce compliance costs (by 60% in the case of sulfur emissions in the U.S.) and when they are auctioned they generate government revenues. It is accurate to say that no fully-functioning tradable emission permit systems exist outside the United States. Nevertheless, the 1990s (especially post-Rio) have seen a growing interest among transitional and developing countries and a number of experimental introductions, though actual trades are still rare. Tradable emission permit systems have been designed for Almaty, Kazakhstan (one trade known), and Santiago, Chile (no trades yet). Study and experimentation are known to be underway in the Opole region of Poland, in Sokolov, the Czech Republic, and Shanghai, China. Interest is also being expressed in Thailand, El Salvador and Mexico. The major obstacles to the wider introduction of tradable permits systems is the lack of inventory of emissions and sources and the weakness of monitoring and enforcement of systems of many developing countries. It is reasonable, however, to expect further experiments and a few actual trades taking place over the next five years.

Other notable introductions of economic instruments in recent years include user charges for waste treatment in Thailand, a household waste collection and deposit refund schemes in Korea, environmental performance bonds in the Philippines, Malaysia and Indonesia, higher entry fees to national parks in Kenya and Costa Rica, tradable water rights, individual tradable quotas for fisheries and auctioning of city street use rights in Chile, bioprospecting fees in Costa Rica and Madagascar and deforestation charges in Brazil and the Central African Republic. Malaysia has been using environmental performance bonds and deposit refund systems to ensure land reclamation after mining. The bond ranged between M\$1,000 per acre in Johore and Kuala Lumpur, to M\$500 per acre in Selangor (Steele and Ozdemiroglu 1994).

Since 1991 the Philippines government introduced a system of bidding for forest concessions accompanied by environmental performance bonds. The concession is awarded to the bidder willing to post the highest bond (floor price 100 pesos per m³) to secure compliance with the terms of the lease agreement. The scheme places heterogeneous forest acres (production and protection forests) under single management responsibility. This results in cross-financing of the protection forest by the production forest. The reforestation bonds are set at \$400 per hectare, which may or may not lead to increased reforestation, depending on the costs of reforesting a hectare of land in the Philippines.

Table 7. Indicative Revenue Potential from Forestry and Externality Taxation, Indonesia, circa 1993

<i>Initiative</i>	<i>Incremental Revenue Potential (billion US\$)</i>	<i>Share of 1993 Gov. Dom. Revenues (percent)</i>
<i>Forestry:</i>	\$1.5-2.0	6-8%
Raise stumpage fees to recover 75% of logging rents		
<i>Pollution:</i>	\$0.2-0.5	1-2%
Pollution charges for Jabotabek urban area		
<i>Congestion:</i>	\$0.4-0.6	2-3%
Congestion charges for urban and inter-urban Indonesian roads		

Source: World Bank, "Indonesia Resource Mobilization: Challenges and Opportunities," Country Operations Division, East Asia and Pacific Region, World Bank, October 1994.

4.4 National Environmental Funds

Environmental funds are specialized funds or institutions designed to collect earmarked revenues and disburse them for environmental and conservation purposes. Examples include, trust funds, foundations, endowments, revolving funds, green funds, and other grant- or loan-making entities. National environmental funds are a special type of fund that collects and disburses public money in support of national environmental strategy, environmental action plans, or environmental policy. They are usually funded or capitalized from pollution charges, fees and fines, budgetary contributions, debt-for-nature swaps, and contributions from donor agencies. Green funds, on the other hand, are private, social-purpose funds made available by private investors for lending to environmentally-sound enterprises and projects.

In principle, National Environmental Funds (NEFs) are institutions that manage resources generated by other financing mechanisms (such as environmental taxes, debt for nature swaps, etc.). As such they do not constitute new sources of finance. However, NEFs have actually been able to mobilize and attract funds for environment that may not have been made available otherwise. The setting up of the funds catalyzed efforts to seek new sources of funding; their existence, in some cases, attracted international transfers; and, earmarking has been important in gaining public support and compliance (Lovei 1995; Panayotou 1995). Furthermore, some NEFs (e.g. Poland, Czech Republic) have been able to leverage additional funds, although the leveraging potential of NEFs has not been fully tapped.

Environmental funds have several advantages in countries with undeveloped capital markets and weak environmental management; they mobilize resources, provide a stable source of funding, enhance domestic skills and capacities, help demonstrate the bankability of environmental projects, accelerate environmental improvements, and not the least, encourage local and NGO participation. They have also raised some concerns: (a) that NEFs might retard rather than promote the development of capital markets, (b) that revenues rather than need and social return drive environmental investments, and (c) that earmarking takes environmental investments out of the competition for funds and constrains the optimization of overall social returns from scarce resources. To the extent that NEFs mobilize resources that otherwise would be unavailable this criterion is less valid unless they crowd other, more beneficial investments. Environmental funds emerged as a major new trend in environmental and conservation

finance since the early 1990s. To date, National Environmental Funds have been set up in over 20 developing countries (e.g., Argentina, Mexico, Peru, Philippines, Chile, Thailand, Bolivia, Honduras, Uganda, and others) and in most transition economies in Eastern Europe (e.g., Bulgaria, Czech Republic, Hungary, Poland, Slovak Republic, and Russia).

NEFs in transition economies, being largely a legacy of central planning, tend to be comprehensive funds in the sense that they finance a broad range of environmental investments. They are usually located within the Ministry of the Environment; in some countries, such as Poland, the Fund is a separate agency with an autonomous management structure. Most transition country NEFs rely on environmental taxes, charges, and fines for the revenues. Emission charges are the principal source of revenues for NEFs in Poland, Russia, Estonia, Czech Republic, Slovakia, and China. Hungary uses a variety of instruments to capitalize its fund, including non-compliance charges, product charges, and a transit traffic tax, while Bulgaria uses car import taxes as well as non-compliance charges (Lovei 1995). The Polish National Fund for Environmental Protection and Water Management is one of the most sophisticated and influential NEFs in transition: In 1993 it has contributed 22% of Poland's total environmental expenditures and 36% for local regional funds. Established only in 1989, by 1994 the Polish fund had disbursed over \$500 million for environmental activities (see Box 3).

In developing countries NEFs tend to be more specific and, because environmental taxation is not as well developed as in transition economies, they rely on external sources or other fees for funds. Pearce (1997) reports that in Algeria the main source of the fund is a tax on airline tickets, in Belize a tax on foreign tourists, and in Costa Rica a tax on petrol, while Brazil's municipal environmental funds are financed by World Bank loans. It is reasonable to expect further development and proliferation of environmental funds in the foreseeable future. A key to their future success is more efficient management, reduced administration cost, and use of rigorous benefit-cost analysis of projects as the principle criterion for disbursing funds.

4.5 *Mobilizing Private Sector Resources*

Not all resources needed to finance sustainable development could or should be mobilized by the public sector. Ideally, public sector funds (and ODA) should be used to catalyze and leverage private sector funds. One way of encouraging private sector participation in sustainable development investments is by removing barriers (such as public monopoly and underpricing) to its participation in provision and management of infrastructure and public services including efficient electricity production, renewable energy, water supply and sanitation, waste treatment, solid waste collection etc. Another way is by entering into private-public sector partnerships, cofinancing arrangements and joint ventures. In mixed and formerly planned economies where public utilities, state enterprises and parastatals absorb a significant portion of the state budget, privatization may free public resources for sustained development. Where state enterprises are inefficient and/or loss making privatization is equivalent to subsidy reduction and improved cost recovery. A privately provided service would try to recover costs by charging users for its use. A private company is more likely to elicit the users' preferences as to the type and level of service and their willingness to pay for it than a state enterprise or public bureaucracy. Charging users full cost for services like water supply sanitation and solid waste collection means better cost recovery, smaller budget deficits or larger public sector savings, better service, and wider coverage. The health benefits so derived are equivalent to those achieved through larger public health expenditures.

The 1990s have witnessed unprecedented interest and action towards tapping the resources of the private sector by (a) undertaking policy reforms to provide a more stable and predictable policy environment and a more transparent legal and environmental framework; (b) by adopting financing and management innovations such as BOT, BOO and BOL; and (c) by privatizing sectors such as power generation, telecommunications, transport infrastructure, water supply and sanitation, and even environmental monitoring, all of which were previously in the inclusive domain of the public sector. In terms of privatization, it is important to note the global nature of the trend and the advancement of innovative

approaches in the 1990s that made privatization socially more equitable and politically more acceptable. For example, in Bolivia the proceeds from privatization were used to capitalize the pension funds, while in the Czech Republic the public assets were privatized to the entire population through a voucher system. Other recent privatizations include telecommunications in Costa Rica, power generation in Argentina, water supply, and road and traffic management in the Philippines, and the urban rail system development and waste management in Thailand. Table 5 below summarizes private sector activities and institutional arrangements in financing water and sanitation services in Asia, most put in place in the past five years. A World Bank (1996) review of the post-privatization performance of 60 companies reveals an 11% improvement in efficiency, 44% improvement in investment, and 45% improvement in profitability; employment and tax payments also increased.

Privatization and other forms (e.g. joint ventures and partnerships) of involving the private sector in financing sustainable development are likely to accelerate in coming years as governments seek to mobilize resources to improve infrastructure and public services. The global market for environmental investments alone is projected to exceed \$600 billion a year by 2000 (IFC 1992).

The key is to ensure that (a) the poorest countries benefit from these trends by adopting appropriate policies and (b) that adequate safeguards such as regulations, EIAs and environmental performance bonds are used to ensure that rapidly growing private sector investments are increasingly directed to sustainable development. The World Bank estimates that about 100 countries are making good progress in introducing incentives for redirecting private finance to sustainable investments (A. Steer quoted in UN 1996). Sixty-five countries have sought financial support from the World Bank to reform their environmental policy framework so that private investment flows will be directed towards more sustainable investment. Market-based instruments are a vital way of helping reshape financial flows.

Table 8. Private Sector Activities and Institutional Arrangements in Financing Water and Sanitation Services

<i>Country</i>	<i>Activity—Institutional Arrangement</i>
Bangladesh	Solid waste disposal—contractual basis per piece of work
	Operation of community latrine—lease
	Community maintenance—advance prequalification and quotation (similar to retainership)
India	Garbage collection and disposal—contractual
	Maintenance of parks and gardens—contractual
	Operation of water supply and sewerage pumping stations—contractual
	Informal markets for water supply, solid waste collection, recycling
Indonesia	Water distribution—private vending of water
	Water source/water supply system development—BOT
	Water distribution—private vending of bottled
Malaysia	National Sewerage System
	Water supply—BOT
	Garbage disposal—contractual
Pakistan	Water and Power Development Authority—Sale of equity
Thailand	Water supply—BOT
Philippines	Water distribution—private vending of water
	Garbage disposal—contractual

Source: Pernia *et al.* (1996)

Box 3. The Polish National Fund: Financing Environmental Protection Through Earmarked Fees and Charges

The Polish National Fund for Environmental Protection and Water Management (National Fund for short) was established by Parliament in 1989 as an independent state institution with a Supervisory Board appointed by the Minister of the Environment, for the purpose of financing environmental investments. Its revenues are derived from three sources: (a) pollution charges, non-compliance fines and natural resource use fees (by far the most important source), (b) revenues from the Fund's investments in environmental enterprises; and prospectively, (c) external sources such as bilateral and multilateral assistance agencies (e.g. EU/Phare¹, Global Environmental Facility). As a rule, 10% of the pollution charges and fines go to local environmental funds while 60% of the balance goes to the provincial funds and 40% to the National Fund. The latter has also a 40% equity stake in the Environmental Protection Bank (Eco-Bank), another innovative Polish environmental financing institution.

The National Fund is Poland's leading financial institution for environmental protection with a mandate to finance investments of national scale and scope or involving large or heavily polluting enterprises (beyond the ability of local and regional funds) or regions particularly degraded. To appreciate the role of this institution, consider that in 1993, the National Fund has contributed 22% of Poland's total environmental expenditures and 36% for local and regional funds. For comparison, the private sector's resources and loans contributed 23%, municipalities 10%, and the state budget and foreign assistance 5% each. By mid-1994, the National Fund disbursed over \$500 million for environmental activities.

The National Fund provides financial assistance in the form of soft loans, grants and subsidies, partial forgiveness of loans, subsidies to loans originated by the Eco-Bank and guarantees against loans for environmental protection. Soft loans constitute the principal form of assistance; in 1993, they accounted for 77% of all disbursements. Interest rates charged on soft loans are between 20 and 100% of the interest on refinancing credit of the National Bank of Poland. Given Poland's high rates of inflation, these nominal rates amount to negative interest advantage over commercial rates. Interest rate subsidies for Eco-Bank loans are given at the same terms as soft loans, while outright grants and subsidies are preferential co-financing mechanisms for environmental investments. Forgiveness of up to 50% of the loan principal is granted in certain circumstances of high environmental benefits and stringent repayment discipline under the condition that the funds saved be reinvested in further environmental improvements.

Given its dominant market share, the National Fund has considerable leverage potential which remains largely unexploited since leveraging private funds for environmental protection is not an explicit objective of the fund or criterion for project selection. However, the provision that limits the Fund's participation to 50% (in practice 20%) of the project's cost and requires co-financing from the borrower's own funds or other sources creates a basis for leveraging and collaboration with other financial institutions.

Source: Panayotou (1995)

¹ Phare is a program of the European Union which provides grant finance to support reforms in Central and Eastern Europe toward eventual membership of the European Union.

5. LESSONS LEARNED AND FUTURE PROSPECTS

The trends in sustainable development financing since Rio moved qualitatively in the right direction but quantitatively fell considerably short of the hopes raised and targets set at Rio. Countries that have implemented and sustained macroeconomic reforms outward-oriented trade policies and structural changes have been able both to mobilize resources at home and to attract private capital from abroad. These mostly middle-income countries in Asia and Latin America were also the countries that have successfully reduced or rescheduled their external debt and engineered a smooth reentry back into the international capital markets. Their prospects for attracting more resources in the future and advancing their transition to sustainable development are bright, provided that they continue to follow prudent macro policies and accelerate the development and implementation of stable and predictable environmental policies. Particular attention is needed to channel increasing flows of foreign (and domestic) private capital to sustainable development activities through removal of the remaining subsidies and internalization of environmental costs through more sophisticated economic instruments.

Poor countries, on the other hand, most of them in Sub-Saharan Africa, have been beset by bad policies, unsustainable levels of external debt, low levels of domestic resource mobilization, and scant external private capital flows. Countries with bad policies face high levels of inflation, economic instability, slow growth, lower public and private sector savings, and generally are not attractive to foreign investment. Under these conditions ODA offers possibly the only way to break the vicious circle. But to do so it must meet the following criteria: (a) it must be of sufficient critical mass; (b) it must focus on those countries that are committed to undertaking serious reforms; (c) it must leverage additional external financial resources through incentives, co-financing, under-writing of country risks and creating venture capital funds and joint ventures; (d) it must not be open-ended, i.e., it must provide for an exit strategy; and (e) its resource contribution should not be jeopardized or diluted by resource outflows to service unsustainable levels of external debt. In several of these respects, the IMF-World Bank HIPC Debt Initiative offers grounds for optimism.

To increase sustainable development financing in the future, five sets of actions would be necessary. First, policies must be developed to improve the access of developing countries to external finance by developing a more realistic and constructive approach to ODA, by assessing and improving the contribution of foreign direct and portfolio investment to sustainable development, and resolving remaining debt issues. Second, policies must be adopted to develop a more comprehensive approach to domestic resource mobilization by continuing to phase out of environmentally harmful subsidies, to accelerate the practical application of economic instruments, and to increase the private sector participation in sustainable development. Third, innovative financial mechanisms should be promoted by sharing successful national experience, by resolving political and technical issues concerning the implementation of international and financial instruments, and by developing mechanisms for compensating developing countries for the provision of global environmental services. Fourth, no matter how many resources are being mobilized expressly for sustainable development, they would be dwarfed by the \$4 trillion of investment that occurs every year in the world, \$1 trillion in developing countries. Unless this huge amount of investment is reshaped and redeployed along the lines of Agenda 21, sustainable development would remain an elusive goal, no matter how much additional financing it mobilized. Lastly, there should be continued monitoring and data base development for tracking progress in mobilizing financial resources and in attaining milestones on the road to sustainable development. Only then can we look forward to Rio+10 with a better match between financing needs and financial resources and with sustainable development within easier reach.

To sum up, the record of the past five years can best be described as a mixture of unfulfilled expectations, unexpected developments, and promising changes. Most prominent among the unfulfilled expectations is the failure of ODA to increase towards the UN target of 0.7 of the donors' GNP and the lack of progress toward international environmental taxation. In real terms, ODA actually declined both absolutely and as a percent of the donors' GNP while international environmental taxation stalled by the reluctance of

nations to yield sovereign powers of taxation to a supranational authority. The single most important unexpected development has been the quadrupling of private capital flows to developing countries. Unfortunately, the environmental and social sectors and poor countries in general received disproportionately little foreign investment. Other successes have been the alleviation of the debt burden of the middle income developing countries and a general trend towards a reduction of environmentally damaging subsidies. Two institutional innovations of the 1990s stand out as effective resource mobilizers: the global environmental funds (GEF and the Montreal Protocol Environmental Fund) and national environmental funds. Other promising trends include the increased use of economic instruments and the mobilization of private sector resources through privatization and innovative financing arrangements.

The greatest needs and best prospects for the future include (a) the alleviation of the debt burden of the highly indebted poor countries, (b) more efficient use of ODA to leverage private sector flows and domestic reforms, (c) better channeling of foreign direct investment towards sustainable development activities, (d) further and faster reduction of environmentally harmful subsidies, (e) acceleration of fiscal reforms, and (f) more effective private sector involvement and extensive use of economic instruments both as incentives and as revenue sources. While mobilization of additional resources, both external and domestic, is badly needed especially for the poorest countries, how efficiently existing resources are used is equally important. A major redeployment of investment resources, both external and domestic, towards the sectors of Agenda 21, would help increase efficiency and targeting and hence the social reform from both existing and new resources.

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